

REMARKS

Reconsideration is respectfully requested. In this Response claims 6, 11, 16, 34, and 37 have been amended; and claim 41 has been added. Support for these amendments is found throughout the originally filed specification.

Claims 2, 3, 6, 8 – 14, 16, 19 – 23, 25, 27, 34 – 37, 39, 40, and 41 are pending.

Claim Objections

Claim 16 is objected to as depending from cancelled claim 15. Claim 16 has been amended to depend from claim 34. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Allowed claims

The applicants thank the examiner for allowing claims 19-23, 36 and 40.

Allowable subject matter

The examiner has objected to claims 3, 6, 11-14 and 35 as being dependent upon a rejected base claim. The applicant presents herewith new claim 41 which recites the subject matter of claim 3 in independent form. Claims 6, and 11 have been amended to depend from claim 41. Claims 6, 11-14 and 35 now depend directly or indirectly from claim 41, and should be held allowable. Allowance is respectfully requested.

Claim Rejections – 35 USC § 103(a)

Claims 2, 8-10, 16 25, 27, 34, 37 and 39 are rejected under 35 USC § 103(a) as being unpatentable over Suzuki et al. (US 6, 031,718) (hereinafter Suzuki) in view of Losinski (US 5,861,703) (hereinafter Losinski).

Respectfully, to reject the claims in an application under Section 103 the Examiner's analysis must comply with the obviousness analysis required by Section 103 as interpreted by the Court. It is well settled that in obviousness rejections, the Examiner is to:

- 1) view the invention as a whole,

- 2) identify the difference with the prior art,
- 3) identify those of ordinary skill in the art, and
- 4) determine whether those of ordinary skill in the art will be motivated to make the modification to the prior art to arrive at the claimed invention.

Claim 34 as currently amended reads as follows:

34. A standardized peripheral apparatus comprising
a board;
an integrated circuit coupled to the board;
a case, enclosing the integrated circuit and the board, having a form factor including a plurality of external dimensions compatible with a Personal Computer Memory Card International Association (PCMCIA) standard having a plurality of specifications governing the form factor and the external dimensions; and
a thermal management arrangement including
a vent on the case to at least facilitate an exhaust of heat convectively emitted from the integrated circuit into an ambient, and
a jet actuator coupled to the board to provide an air current to at least facilitate the exhaust of the convectively emitted heat through the vent, the air current in convective communication with the integrated circuit. (underlining added)
37. A method comprising:
operating an integrated circuit coupled to a board, the integrated circuit and the board being housed inside of a case having a form factor including a plurality of external dimensions complying with a Personal Computer Memory Card International Association (PCMCIA) standard having a plurality of specifications governing the form factor and the external dimensions, leading to heat being convectively emitted from the integrated circuit; and
providing an airflow with a jet actuator across the integrated circuit to exhaust the convectively emitted heat through a vent in the case, the jet actuator coupled with the board. (underlining added)

Suzuki discloses an IC CARD AND IC COOLING TRAY (title) wherein the components inside the IC card are cooled using various means according to various embodiments. Suzuki's teachings are all directed to conducting heat away from electronic components in the immediate proximity around the electronic components through passive conductive means. The only teaching Suzuki provides regarding active and convective heat removal is illustrated in FIGS. 12, 19-20 and 30-34. For example FIG. 19 illustrates heat conducted passively through a wall 22 then actively removed with a fan 25. Suzuki's teaching regarding convective removal of heat is never to

provide an air current in convective communication with an integrated circuit, and is never to provide an air current with a jet actuator coupled to the board on which the integrated circuit is also coupled as recited in claim 34. Suzuki also never teaches providing an airflow with a jet actuator across the integrated circuit, as recited in claim 37.

As stated Suzuki's teaching is limited to passive conduction proximal to electronic components and active convective heat removal distal from the electronic components. Suzuki never teaches or suggests active convective heat removal proximal to an integrated circuit. Suzuki's FIG. 4 teaches openings to provide passive convection, FIG. 5 teaches increasing the surface area of the card housing 2 with projection members 12 for better thermal radiation. FIGS. 6-9 teach conduction to the card housing 2 surface. FIGS. 10-11 teach extending a metal block 14, which is proximal to the electronic components 6, with a rear portion 15 external to the card housing 2 to radiate heat outside the card housing. FIG. 12 teaches a fan external to the card housing to blow air onto the rear portion 15. The embodiment shown in FIG. 13 teaches "a wiring layer.. formed on the inner surface of the card housing 2" (col. 7 lines 37-38) "thereby radiating heat from the electronic components 6 with a high efficiency" (col. 7, lines 44-45). FIG. 14 adds projecting member to increase surface area. All the rest of Suzuki's teachings are directed to extending the card housing, beyond a wall surface 19 of an IC card mounting device.

Suzuki's teaching would not motivate one of ordinary skill in the art to provide an air current in convective communication with an integrated circuit, and would not motivate one of ordinary skill in the art to provide an air current with a jet actuator coupled to the board on which the integrated circuit is also coupled, or providing an airflow with a jet actuator across the integrated circuit.

Further, Suzuki's teaching, teaches away from "having a form factor including a plurality of external dimensions compatible with a Personal Computer Memory Card International Association (PCMCIA) standard" as claimed by applicants. Clearly the embodiments illustrated are not compatible with this standard and are in fact a refinement on Suzuki's teaching to add a projecting member (as shown in FIGS. 10-12)

to provide a "portion 2a [which] is exposed to the outside of the IC card... thereby enhancing heat radiation from this portion 2a."

Losinski discloses a LOW PROFILE AXIAL-FLOW SINGLE BLADE PIEZOELECTRIC FAN (title). However, Losinski's teaching is limited to the fan itself and does not teach or suggest to one skilled in the art "a jet actuator coupled to the board to provide an air current to at least facilitate the exhaust of the convectively emitted heat through the vent, the air current in convective communication with the integrated circuit" as claimed by applicants.

There is insufficient motivation to combine Losinski with Suzuki as proposed by the examiner. In fact Suzuki teaches away from "an air current in convective communication with the integrated circuit" or "providing an airflow with a jet actuator across the integrated circuit" as discussed. Further, even if one of ordinary skill were motivated to combine Losinski with Suzuki applicants' invention would not result. Accordingly, claims 34 and 37 are not rendered obvious by the references cited and are in condition for allowance. Reconsideration and allowance is respectfully requested.

Claims 2, 8-10, 16 25, 27, and 39 depend directly or indirectly on one of the base claims 34, and 37. Claims 34 and 37 are in condition for allowance as discussed. Therefore claims 2, 8-10, 16 25, 27, and 39 are also in condition for allowance. Allowance is respectfully requested.

Conclusion

Applicant submits all the non-withdrawn claims in the present application, specifically claims 2, 3, 6, 8 – 14, 16, 19 – 23, 25, 27, 34 – 37, 39, 40, and 41 are in condition for allowance. Reconsideration of the Examiner's objections and rejections, and issuance of a Notice of Allowance is respectfully requested.

If the Examiner has any questions, he is invited to contact the undersigned at (503) 796-2496.

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,
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